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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/501,100

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Katsuo Sugahara

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EXAMINER

ROE, JESSEE RANDALL

ART UNIT

PAPER NUMBER

1793

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/501,100	<b>Applicant(s)</b> SUGAHARA, KATSUO	
	<b>Examiner</b> Jessee Roe	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-26 and 28 is/are pending in the application.
- 4a) Of the above claim(s) 4-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2, 3 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>17 March 2008</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Substitute Office Action***

This Office Action will serve as a substitute for the Office Action of 8 May 2008 in view of the facsimile transmission of a legible copy of page 4 of the Declaration under 37 C.F.R §1.132 submitted to the Examiner on 21 May 2008.

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 12 March 2008 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuo Yamanaka et al. (JP 06-128671) alone, or alternatively in view of Kritzer et al.

(An assessment of supercritical water oxidation (SCWO) Existing problems, possible solutions and new reactor concepts).

In regards to claims 2 and 3, Kazuo Yamanaka et al. (JP '671) discloses a nickel-based alloy consisting of 38-45 weight percent chromium; 0.5-5.0 weight percent, in total, of one or more of molybdenum, tungsten, and vanadium; up to 0.1 weight percent magnesium; up to 1.0 weight percent manganese; up to 1.0 weight percent silicon; and up to 0.07 weight percent carbon; up to 1.0 weight percent silicon; 40-57 weight percent nickel; and the balance iron (greater than 0-21.5 weight percent), which overlaps the claimed amounts of chromium, molybdenum, magnesium, manganese, silicon, carbon, and iron, which is a prima facie case of obviousness (abstract). See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the desired amounts of the elements from the ranges of elements disclosed by Kazuo Yamanaka et al. (JP '671) because Kazuo Yamanaka et al. (JP '671) disclose the same utility throughout the disclosed ranges.

In regards to the limitation of nitrogen being in the range of 0.001 to 0.04 weight percent in claim 2, the Examiner notes that all of the embodiments disclosed by Kazuo Yamanaka et al. (JP '671) have nitrogen within the claimed range.

In regards to the recitation of having "excellent corrosion resistance relative to supercritical water environments containing inorganic acids" in claim 2, the Examiner asserts that the alloy of Kazuo Yamanaka et al. (JP '671) would have such properties because Kazuo Yamanaka et al. (JP '671) discloses substantially the same

composition as that of the claimed invention. See MPEP 2112.01 I.

Alternatively, Kazuo Yamanaka et al. (JP '671) disclose that the intended use of the nickel-based alloy would be for lead containing hot water as well as in thick alkali environments (basic environments) and therefore does not specify environments containing inorganic acids.

Kritzer et al. discloses that nickel-base alloys would have excellent corrosion resistance relative to that of titanium in supercritical environments in the presence of acids and good resistance to alkaline environments and phosphoric acid and hydrofluoric acid environments at subcritical temperatures (2.1 and Table 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the nickel-based alloy used in alkali environments, as disclosed by Kazuo Yamanaka et al. (JP '671), to inorganic acid environments, as disclosed by Kritzer et al., because nickel based alloys would have excellent corrosion resistance relative to that of titanium in supercritical environments containing acids, as disclosed by Kritzer et al. (2.1 and Table 1).

In regards to claim 3, Kazuo Yamanaka et al. (JP '671) discloses forming the alloy into a thick plate, round bar, or pipe, which would be members for a supercritical water process reaction apparatus (0001). Furthermore, the Examiner asserts that the recitation "for a supercritical water process reaction apparatus" would not limit the structure of the member and therefore this recitation has been considered an intended use of the alloy. MPEP 2111.02 II.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuo

Yamanaka et al. (JP 06-128671) in view of Kritzer et al. (An assessment of supercritical water oxidation (SCWO) Existing problems, possible solutions and new reactor concepts).

In regards to claim 28, Yamanaka et al. (JP '671) disclose a nickel-based alloy that would be formed into a thick plate, round bar, or pipe as shown above, but Yamanaka et al. (JP '671) do not specify using the nickel-based alloy in a system.

Kritzer et al. discloses using nickel-based alloys in a reactor (system) in order to have corrosion resistance that would be at least as good as that of titanium for systems containing fluoride ions (2.1 and Table 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the nickel-based alloy, as disclosed by Yamanaka et al. (JP '671), in a reactor (system), as disclosed by Kritzer et al., in order to have a reactor system with corrosion resistance that would be at least as good as that of titanium for systems containing fluoride ions, as disclosed by Kritzer et al. (2.1 and Table 1).

With respect to the recitation "for detoxifying organic toxic materials comprising a member for a supercritical water process reaction apparatus" the Examiner asserts that this would not limit the structure of the system and therefore this recitation has been considered an intended use of the system. MPEP 2111.02 II.

### ***Response to Arguments***

Applicant's arguments filed 12 March 2008 have been fully considered but they are not persuasive.

First, the Applicant primarily argues that the instant invention achieves improved corrosion resistance through the use of critical amounts of molybdenum. In response, the Examiner notes that Kazuo Yamanaka et al. (JP '671) discloses 0.05 to 5.0 weight percent of one or more of molybdenum, tungsten and vanadium (abstract). To establish unexpected results over a claimed range, applicants should compare a sufficient number of tests both inside and outside the claimed range to show the criticality of the claimed range. MPEP 716.02(d)(II). The data shown in Table I on page 4 does not compare a sufficient number of tests both inside and outside of the claimed range for molybdenum. Therefore, the criticality of the amount of molybdenum has not been established.

Second, the Applicant primarily argues that when each of chromium, iron, and silicon are outside the range by claim 2 of the instant invention, significant weight reduction of the nickel-based alloy is observed. In response, in order to establish unexpected results over a claimed range, applicants should compare a sufficient number of tests both inside and outside the claimed range to show the criticality of the claimed range. MPEP 716.02(d)(II). An affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a prima facie case of obviousness. MPEP 716.02(e).

***Response to Arguments/Declaration***

The Declaration under 37 CFR 1.132 filed 12 March 2008 is insufficient to overcome the rejection of claims 2-3 as being unpatentable over Kazuo Yamanaka et al. (JP '671) as set forth in the last Office action because:

In order to establish unexpected results over a claimed range, applicants should compare a sufficient number of tests both inside and outside the claimed range to show the criticality of the claimed range. MPEP 716.02(d)(II). An affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a prima facie case of obviousness. MPEP 716.02(e). The data shown in Table I on page 4 of the Declaration does not compare a sufficient number of tests with iron and silicon inside and outside the claimed range to show criticality of the claimed range. Furthermore, the closest value, in Table 1 on page 4 of the declaration, to 1 weight percent iron, as instantly claimed, would be 3.1 weight percent iron and the closest value to 0.05 weight percent iron would be no iron (whereas, the composition disclosed by Kazuo Yamanaka et al. (JP '671) must contain iron). Also, the closest value, in Table 1 on page 4 of the declaration, to 0.1 weight percent silicon, as instantly claimed, would be 0.32 weight percent silicon and the closest value to 0.01 weight percent silicon would be no silicon. Thus, the criticality of the amount of iron and/or silicon as instantly claimed has not been established.



***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571) 272-5938. The examiner can normally be reached on Monday-Friday 7:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

JR